

Research Article

Comorbidities, infections and mortalities of COVID-19 in Bangladesh in the course of January-May 2022

Anayat Ullah Khan¹, Ahasan Ullah Khan^{2,3*}, Foyj Ullah Khan⁴ and Shakhera Khanom⁴

¹Department of Mathematics, Jashore University of Science and Technology, Jashore-7408, Bangladesh

²Climate-Smart Agriculture Lab, Department of Agroforestry and Environmental Science, Faculty of Agriculture, Sylhet Agricultural University, Sylhet-3100, Bangladesh

³Department of Entomology, Faculty of Agriculture, Sylhet Agricultural University, Sylhet-3100, Bangladesh

⁴Department of Information and Communication Technology, Mawla Bhashani Science and Technology, Tangail-1902, Bangladesh

Abstract

Background: COVID-19 is the extreme smash of the present-day century that emaciated fitness, financial system, and ordinary life.

Objectives: This research assessed the condition and relation of tests, infections, recoveries, and deaths of SARS-CoV-2 from January to May 30, 2022.

Methods: The research plan was carried out from January 1 to May 31, 2022 ($n = 151$ days) to state the position of Bangladesh towards widespread COVID-19. The facts in this study became acquired from extraordinary government groups.

Results: The total cases, infections, recoveries, and deaths were 2633750, 367208, 357309, and 1053, respectively, during the study period. In January 2022, the total number of COVID-19 tests, infections, recoveries, and deaths was 987194, 213294, 19112, and 315, respectively. In February 2022, the total number of COVID-19 tests, infections, recoveries, and deaths was 922657, 143744, 250422, and 643, respectively. In March 2022, the total number of COVID-19 tests, infections, recoveries, and deaths was 353555, 5810, 49727, and 63, respectively. In April 2022, the total number of COVID-19 tests, infections, recoveries, and deaths was 152691, 977, 12490, and 7, respectively. In May 2022, the total number of COVID-19 tests, infections, recoveries, and deaths was 127950, 1016, 6166, and 4, respectively. The maximum and the minimum number of COVID-19 tests were 49492 and 1653 on January 25 and May 4, respectively. The maximum and the minimum number of COVID-19 infestations were 16033 and 1653 on January 22 and May 5, respectively. The maximum and minimum number of COVID-19 recovered were 13853 and 1653 on February 13 and May 9, respectively. The maximum and the minimum number of COVID-19 death was 43 and 0 on February 8 and in several days in 2022, respectively. In the 0.01 level of the two-tailed Spearman, the relationship was positive to moderate to strong relationships and the total number was $n=151$. The mean Spearman correlation for tests was 0.83 (range 0.973 to 0.633), for infested was 0.81 (range 0.579 to 0.973), for recovered was 0.61 (range 0.633 to 0.618), for death was 0.81 (range 0.553876 to 0.618). This research additionally showed a moderate to strong relationship between tests, infections, recoveries, and deaths of SARS-CoV-2.

Conclusions: COVID-19 has spread out unexpectedly to 64 districts in Bangladesh. The persevering with the occurrence of COVID-19 infections has emphasized the significance of the short and accurate and advanced 118 laboratory diagnoses to restriction it unfolds. In this situation, human beings must keep away from public gatherings as plenty as possible and pass return home as speedy as possible after finishing work in a public place. It is safer now because the vaccine controlled the infestation and death rate of COVID-19 in Bangladesh.

More Information

***Address for Correspondence:** Ahasan Ullah Khan, Climate-Smart Agriculture Lab, Department of Agroforestry and Environmental Science, Department of Entomology, Faculty of Agriculture, Sylhet Agricultural University, Sylhet-3100, Bangladesh, Email: ahasanullahsau@gmail.com

Submitted: June 22, 2022

Approved: July 05, 2022

Published: July 06, 2022

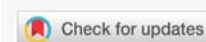
How to cite this article: Khan AU, Khan AU, Khan FU, Khanom S. Comorbidities, infections and mortalities of COVID-19 in Bangladesh in the course of January-May 2022. Int J Clin Virol. 2022; 6: 024-028.

DOI: 10.29328/journal.ijcv.1001045

ORCID: <https://orcid.org/0000-0002-7029-8215>

Copyright: © 2022 Khan AU, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Keywords: SARS-CoV-2; COVID-19; Tests; Infections; Recoveries; Deaths; Bangladesh





Introduction

Human infections with extreme acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes the radical Coronavirus disorder (COVID-19), turned into first detected in China in December 2019 [1]. It belongs to the circle of families of Coronaviridae taxonomic group Sarbecovirus, genus Betacoronavirus, and order Noroviruses. It is RNA virus ordering starting from twenty-six to thirty- KB lengthy, crown-form oldsters with eighty-one hundred sixty nM in length, and next-era sequencing and biological technique examination of the ordering uncovered COVID-19 [2]. It became fairly same 88 % to 2 bat-derived SARS-like coronaviruses, and additional distance from SARS-CoV 79%, and MERS-CoV 50% [3]. It's far an infectious pandemic that currently inflamed greater than two hundred international locations around the globe. It has unfolded to alternative international locations mentioned as a global pandemic inside the global [4]. The COVID-19 effect in the agricultural sectors [5-6] and many agricultural fruits, and plants used against COVID-19 as treatment [7].

On January 30, 2020, WHO stated this extreme outbreak was a public health Emergency of international difficulty [8]. Later on, on March eleven, WHO proclaimed this unseen, infectious, risky virus a pandemic while greater cases and deaths have been said [9]. The noticeably contagious disease has unfolded in greater than 215 countries. In Bangladesh, the first 3 instances of COVID-19 were detected on 08th March 2020 [10]. COVID-19 is distributed globally, not easily related to human fitness trouble but also affects the surroundings and the arena economy in diverse methods. The world financial system reduces in which the GDP is bad in maximum nations and remittance increase price is decrease than the previous year.

The COVID-19 virus affects the world financial system and plenty of studies predicted the effect the global pandemic has on the worldwide financial system. The international financial Fund (IMF) said that the virus ailment affects the worldwide economic system, and in the center of April had projected that the worldwide financial system will contract by three percent in 2020 [11]. But in June 2020, IMF pronounced that the increase at 4.9%, which changed into a 1.9%-point decrease from the April forecast. In keeping with the IMF, in June 2021, the worldwide boom turned into a projected at 5.4% and the gross domestic product (GDP) became about 6.5% points decrease from the pre-COVID-19 estimates of January 2020. The remittance is the second-highest income supply after the clothes sector in Bangladesh. The remittance is influencing the GDP of Bangladesh. In 2019, the remittance become recorded at \$18.32 billion [12]. It covers up approximately 6-8% of the country's GDP and decreases a beneficent have an effect on macroeconomic stability, poverty reduction, and also in national profits. It's far a safety valve for plenty of Bangladeshi migrant employees and their households. In 2020-2021, the GDP of India becomes lowest after the years 1991-1992 [13]. In early March 2020, the sector GDP loss turned to 0.8%

whereas the bad GDP change into also discovered in China, America, France, Germany, and Russia [14].

Although the COVID-19 is new, the antique problems have grown to be obvious at this time. Once more, many nice components have been created. Even though the financial scenario in the global was deteriorating, its impact on the surroundings become ordinary. Many studies said that the excess elements of the surroundings are significantly decreased due to lockdown and COVID-19. The covid-19 created new issues also including unemployed state of affairs, water and plastic pollutants, instructional hassle, regulations in activity, tourism enterprise, health emergency, monetary problems, fall in GDP and remittance, share market fall, and so on. The superb is enhancing the air factors, discounting noise pollution, regeneration of biodiversity, improving the virtual transformation, and so forth. In many countries, coronaviruses are being recorded each day because of the wide variety of infections and deaths. Corona has ended up even greater deadly through developing new stains. On 22 June 2022, the COVID-19 instances cases, death, and recovered demise are (545221841, 6342385, and 520387528) inside the global [15]. Thinking about the above fact, this has a look at specializes in the high-quality and terrible effects of COVID-19 from an economic and environmental perspective around the world.

Methods

Study design and period

COVID-19 changed into showed in Bangladesh on March 8, 2020. We amassed publicly shared daily facts from the websites DGHS [16] and IEDCR [17]. The facts collection duration was from January to May 2022 ($n = 151$ days).

Tests of COVID-19

There are two types of tests: a) Diagnostic (virus) test on bronchial samples (nasal samples). It remains to be seen whether a human has COVID-19 at the moment. b) Antibody tests: the regression connection was calculated.

Data retrieval

This study included patients with tests, infections, recoveries, and deaths of COVID-19 based totally on a positive result of the SARS-CoV-2 take a look at through legit web sites of IEDCR, DGHS, and MoHFW. Information was acquired from numerous medical units in Bangladesh states, together with fifty-nine extraordinary establishments that contain the Bangladesh fitness system. All the statistics are real, and those facts amassed from governmental websites, local newspapers, net information websites, and social networks had been pass-checked [18-20].

Statistical analysis

All obtained records have been double-checked, coded, and entered into a database with Microsoft Excel 2016. In January and May 2022, the regression connection turned into calculated. The Spearman rank correlation compared the correlation of two variables, and statistical significance turned



into ordinary at p values of 0.01, 0.05, and 0.1. SPSS version 25.0 (USA) was used to perform all statistical analyses.

Result and discussion

The coronavirus update in Bangladesh from January to May 2022

On March 8, 2020, three people in Bangladesh were verified to have COVID-19. Since then, tests, infections, and deaths have steadily increased. Figure 1 depicts the overall number of infections, recoveries, and deaths. The total number of COVID-19 tests, infections, recoveries, and deaths from January to May 2022 was 2633750, 367208, 357309, and 1053, respectively. After the infestation of COVID-19, the infestation and death are increasing in the world and also in Bangladesh [21-22].

The overall number of COVID-19 tests, infections, recoveries, and deaths in January 2022 was 987194, 213294, 19112, and 315, respectively. The overall number of COVID-19 tests, infections, recoveries, and deaths in February 2022 was 922657143744, 250422, and 643, respectively. The total number of COVID-19 tests, infections, recoveries, and deaths in March 2022 was 353555, 5810, 49727, and 63, respectively. The total number of COVID-19 tests, infections, recoveries, and deaths in April 2022 was 152691, 977, 12490, and 7, respectively. The total number of COVID-19 tests, infections, recoveries, and deaths in May 2022 was 127950, 1016, 6166, and 4, respectively (Figure 2). Many studies are similar to these results and [23] find a similar result in Bangladesh in 2020 and 2021.

On January 25, the most COVID-19 tests were performed at 49492 while the lowest was 1653 on 4 May 2022. The mean stander error and stander deviation were 1133.85 and 13932.98, respectively in tests of COVID-19 from January to May 2022 in Bangladesh. On January 22, the most COVID-19 infestations were performed at 16033 while the lowest was 1653 on 5 May 2022. The mean stander error and stander deviation were 340.39 and 4182.82, respectively in infestations of COVID-19 from January to May 2022 in Bangladesh. On February 13, the most COVID-19 recovered were performed as 13853 while the lowest was 1653 on 9 May 2022. The mean stander error and stander deviation were 283.36 and 3481.99, respectively in the recovered COVID-19 from January to May 2022 in Bangladesh. On February 8, the most COVID-19 death was performed as 13853 where the lowest 0 in several days in 2022. The mean stander error and stander deviation were 0.86 and 10.62, respectively in the recovered COVID-19 from January to May 2022 in Bangladesh (Table 1). Similar results were also observed in Bangladesh in 2020 [24].

Spearman's rho correlation analysis among tests, infections, recoveries, and deaths of COVID-19

Spearman's rank-order correlation investigated the association between variables (tests, infections, recoveries,

and deaths) in Bangladesh. Variables were determined to have statistically significant correlations. At the 0.01 level in two-tailed analysis, the results demonstrated a positive, moderate to strong correlation between the variables (Table 2).

Tests: The results revealed a moderate relationship between tests and infections ($r_s = 0.973$), recoveries ($r_s = 0.633$), and deaths ($r_s = 0.876$) of COVID-19. Infections: The results revealed a moderate to strong relationship between infections and tests ($r_s = 0.973$), recoveries ($r_s = 0.579$), and deaths ($r_s = 0.876$) of COVID-19. Recoveries: The results revealed a moderate to strong relationship between recoveries and tests ($r_s = 0.633$), infections ($r_s = 0.579$), and deaths ($r_s = 0.618$) of COVID-19. Deaths: The results revealed a moderate to strong relationship between deaths and tests ($r_s = 0.876$), infections ($r_s = 0.876$), and recoveries ($r_s = 0.618$) of COVID-19. Before calculating r_s , a visual inspection of the scatterplot of tests, infections, recoveries, and deaths confirmed that the relationship between these variables

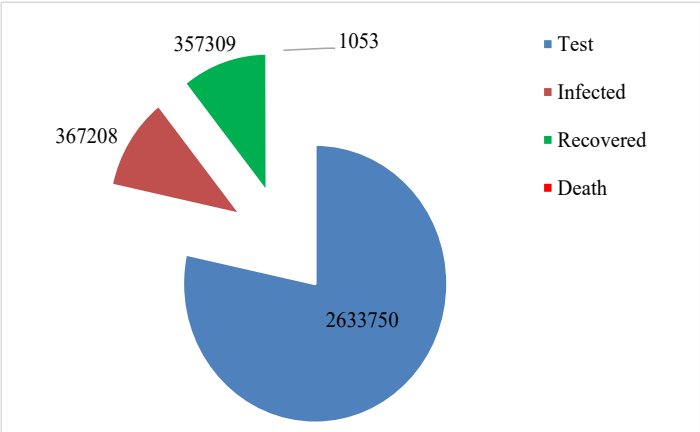


Figure 1: Total number of coronavirus tests, infections, recoveries, and deaths from January to May 2022 in Bangladesh.

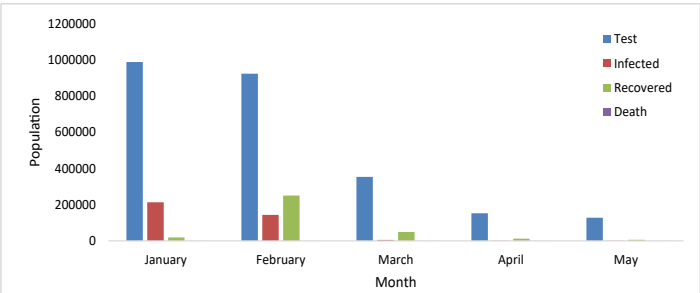


Figure 2: The total number of coronavirus tests, infections, recoveries, and deaths from January to May 2022 in Bangladesh.

Table 1: The Descriptive statistics of coronavirus update in Bangladesh from January to May 2022.

Items	Range	Minimum	Maximum	Mean		Standard Deviation
	Statistic	Statistic	Statistic	Statistic	Standard Error	Statistic
Test	47839.00	1653.00	49492.00	17442.05	1133.85	13932.98
Infestation	16029.00	4.00	16033.00	2431.84	340.39	4182.82
Recovered	13823.00	30.00	13853.00	2366.28	283.36	3481.99
Death	43.00	0.00	43.00	6.97	0.86	10.62

Table 2: Spearman's rho correlation analysis among tests, infections, recoveries, and deaths of COVID-19 in Bangladesh

Spearman's rho Correlations				
	Test	Infestation	Recovered	Death
Correlation Coefficient	1.000	0.973**	0.633**	0.876**
Significance	0.000	0.000	0.000	0.000
Number	151			
Correlation Coefficient	0.973**	1.000	0.579**	0.876**
Significance	0.000	0.000	0.000	0.000
Number	151			
Correlation Coefficient	0.633**	0.579**	1.000	0.618**
Significance	0.000	0.000	0.000	0.000
Number	151			
Correlation Coefficient	0.876**	0.876**	0.618**	1.000
Significance	0.000	0.000	0.000	0.000
Number	151			

Note: ** Correlation is significant at the 0.01 level (2-tailed).

was non-linear and monotonic. Similar results had been also determined in a study where it is in stark comparison to the downward trajectory in Europe, China, and someplace else in Asia, where the number of new cases has seen a decline ahead of an anticipated second wave [24]. In Bangladesh, the mean Spearman correlation for incidence was 0.20 (range 0.66 to range 0.76) and for mortality was 0.35 (range 0.75 to range 0.85). Another also found similar results and the mean results of Spearman correlation for tests, infested, recovered, and death was 0.31, 0.35, 0.796, 0.808 in Bangladesh on April 2021 [25-26].

Conclusion

In Bangladesh, COVID-19 has affected sixty-four districts. The continuing COVID-19 contamination outbreak has underlined the want for early and advanced 118 laboratory diagnoses to restrict the unfolding of the ailment and efficaciously deal with infected people. In this situation, people should keep away from traveling to public places. It'd be unacceptable to leave the house unless there's an urgent want. In case you must move, achieve this upon getting appropriate masks and coming home as soon as viable once the venture is over. To preserve Coronavirus beneath control, the authorities should set up new megaprojects to assist the negative.

Authors' contribution

This work was conducted in collaboration with all authors. AUK and AUK planned, structured, wrote, revised, and rechecked the manuscript thoroughly. AUK¹ analyzed the research data and revised the manuscript. Both authors reviewed carefully and approved the final version of the manuscript.

References

1. Khan AU, Proma AA, Akter M, Rahaman MM, Das D. A Review on Coronavirus Disease (COVID-19) Epidemic Threat for Global Health

in 2020. American Journal of Microbiology Research. 2020; 8(2):57–62. Doi: <https://doi.org/10.12691/ajmr-8-2-3>.

2. Woo PC, Huang Y, Lau SK, Yuen KY. Coronavirus genomics and bioinformatics analysis. *Viruses*. 2010 Aug;2(8):1804-20. doi: 10.3390/v2081803. Epub 2010 Aug 24. PMID: 21994708; PMCID: PMC3185738.
3. Farooq S, Ngaini Z. Natural and Synthetic Drugs as Potential Treatment for Coronavirus Disease 2019 (COVID-2019). *Chemistry Africa*. 2020; 4:1-13. Doi: <https://doi.org/10.1007/s42250-020-00203-x>
4. WHO. World Health Organization. Coronavirus (COVID-19) events as they happen. 2020.
5. Khan AU, Khan AU. The Impact of COVID-19 Pandemic Threat on Agriculture Sector. *Proceeding of 8th International Conference of Biotechnology, Environment and Engineering Sciences on October 18 2020, Stockholm-Sweden*. 2020:15.
6. Khan AU, Ema IJ, Afsana AS, Khan AU, Zannaty A, Faruk MF, Rahman S. Effects of Coronavirus Disease (COVID-19) on Agricultural Sectors in Bangladesh: A Review. *International Journal of Asian Contemporary Research*. 2021;1(1):89-97.
7. AU Khan, MSA Talucder, M Das, S Noreen, and YS Pane. Prospect of The Black Pepper (*Piper nigrum* L.) as Natural Product Used to an Herbal Medicine. *Open Access Macedonian Journal of Medical Sciences*. 2021; 9 (F): 563-573. Doi: 10.3889/oamjms.2021.7113.
8. Worldometer. Countries Where COVID-19 has Spread. *Coronavirus*. 2021. Available online from: <https://www.worldometers.info/coronavirus/countries-where-coronavirus-has-spread/>
9. WHO. (World Health Organization). Coronavirus Disease (COVID-19) Dashboard. *Novel Coronavirus (2019-nCoV) Situation Reports*. 2021.
10. Khan AU, Khan FU, Khanom S, and Khan AU. Novel Coronavirus Disease (COVID-19): Pandemic Situation in Bangladesh. *Nujs Journal of Regulatory Studies*. 2020; 5(2):1-10.
11. IEDCR. Institute of Epidemiology Disease Control and Research. 2020. Available online from: <https://www.iedcr.gov.bd>.
12. Winck, B. IMF chief says its forecast that 170 global economies will shrink may be too optimistic. *Business Insider*. 2020. Available online from: <https://www.businessinsider.com/economic-outlook-imf-global-gdp-shrinkage-coronavirus-too-optimistic-says-2020-4?r=US&IR=T>.
13. Bangladesh Bank. Bangladesh Bank Quarterly. 2020. Available online from: <https://www.bb.org.bd/pub/quaterly/bbquarterly/july-sept2020/bbquarterly.php>.
14. Das KK and Patnaik S. The Impact of COVID-19 in Indian Economy – An Empirical Study. *International Journal of Electrical Engineering and Technology*. 2020; 11(3): 194-202. Available online from: <http://www.iaeme.com/IJEET/issues.asp?JType=IJEETandVType=11andIType=3>.
15. Worldometers. COVID-19 Coronavirus Pandemic. 2022. Available online from: <https://www.worldometers.info/coronavirus/>.
16. DGHS. (Dashboard of Directorate General of Health Services). The Government Republic of Bangladesh. 2020. Available online from: <https://www.dghs.gov.bd/index.php/bd/>.
17. IEDCR. Institute of Epidemiology Disease Control and Research. 2020. Available online from: <https://www.iedcr.gov.bd>, Accessed June 20.
18. CCD. (Coronavirus COVID-19 Dashboard). 2020. Available online from: <http://103.247.238.81/webportal/pag es/covid19.php>.
19. Khan AU, Uddin AHMM, Khan FU, Khanom S, Khan AU. COVID-19: Current Status in Bangladesh. 2020. Doi: <http://dx.doi.org/10.2139/ssrn.3634891>.
20. Khan AU. Information about the covid-19 in Bangladesh (March 2020 to February 2021). 2021. Available online from: <https://www>.



- researchgate.net/publication/351151990_Information_About_The_Covid-19_In_Bangladesh_March_2020_To_February_2021. 2021.
21. Khan AU, Akter R, Khan FU, Khanom S, Khan AU, Afsana AS. Second wave and pandemic situation of COVID-(2020-2021) in Bangladesh. Research Square. 2021; 1-12. Doi: <https://doi.org/10.21203/rs.3.rs-668459/v1>.
 22. Khan AU, Akter R, Khan FU, Khanom S, Khan AU, Afsana AS. Second wave and pandemic situation of COVID-(2020-2021) in Bangladesh. Qubahan Academic Journal. 2021; 1(4): 25-31. Doi: <https://doi.org/10.48161/qaj.v1n4a74>.
 23. Khan AU, Khan FU, Khanom S, Khan AU, Afsana AS. COVID-19 Pandemic Situation in Bangladesh. International Conference on Multidisciplinary Industry and Academic Research. Philippines, 2020;1(1):25.
 24. Khan AU, Akter R, Khan FU, Khanom S, Das B, Khan AU and Afsana AS. Comorbidities, Infections, and Mortalities of COVID-19 in Bangladesh During May-June 2021. International Journal of Infection. 2022; 9(2): e118083. Doi: 10.5812/iji-118083.
 25. Lai JW, Cheong KH. Superposition of COVID-19 waves, anticipating a sustained wave, and lessons for the future. Bioessays. 2020 Dec;42(12):e2000178. doi: 10.1002/bies.202000178. Epub 2020 Nov 16. PMID: 33040355; PMCID: PMC7675615.
 26. Szmuda T, Ali S, Hetzger TV, Rosvall P, Słoniewski P. Are online searches for the novel coronavirus (COVID-19) related to media or epidemiology? A cross-sectional study. Int J Infect Dis. 2020 Aug;97:386-390. doi: 10.1016/j.ijid.2020.06.028. Epub 2020 Jun 12. PMID: 32535297; PMCID: PMC7290205.